



## CTSO Course Alignments: Large Animal Science

Below you will find standards for the Large Animal Science course aligned with competitive events from appropriate career and technical student organizations (CTSOs). Knowing the aligned events for your organization will allow you to have additional tools for teaching course standards, as well as increase student engagement and preparation in your CTSO activities. The final column recommends potential tools from other CTSO organizations. Even if your students are not participating in these organizations, available rubrics, tools, and materials can also add to the instructional resources at your disposal for best teaching your content.

**Important to note:** While the aligned activities below can be important tools in teaching course standards, it is important to note that events may not cover a standard in its entirety and should not be the sole instructional strategy used to address a standard.

	STANDARD	ALIGNED FFA COMPETITIVE EVENTS/PROGRAMS	OTHER POTENTIAL CTSO TOOLS & RESOURCES
1	Synthesize research on the history of large animal domestication to produce an informative essay, including defining and applying industry-specific terminology to classify animals in the correct taxonomy. Justify the historical uses and roles of domesticated animals, and compare historical processes of large animal domestication. (TN Reading 1, 4, 9; TN Writing 2, 4, 9)	<ul style="list-style-type: none"> <li>• <b>FFA:</b> Veterinary Science</li> </ul>	<ul style="list-style-type: none"> <li>• <b>HOSA:</b> Veterinary Science</li> <li>• <b>TSA:</b> Essays on Technology</li> </ul>
2	Review common laboratory safety procedures for tool and equipment operation in the agricultural and biosystems engineering laboratories, including but not limited to accident prevention and control procedures. Demonstrate the ability to follow safety and operational procedures in a lab setting and complete a safety test with 100 percent accuracy. (TN Reading 3; ARNR CS)		<ul style="list-style-type: none"> <li>• <b>HOSA:</b> Biomedical Laboratory Science</li> <li>• <b>SkillsUSA:</b> Occupational Health and Safety</li> <li>• <b>TSA:</b> Biotechnology Design</li> </ul>
3	Explore and compare local and regional career opportunities in the large animal industry and evaluate labor data to predict the employment outlook. Describe in a written or visual representation the knowledge, skills, and abilities necessary for a diverse range of careers in large animal sciences citing specific textual evidence from local job postings and Tennessee labor data. (TN Reading 1, 2; TN Writing 2, 9)	<ul style="list-style-type: none"> <li>• <b>FFA:</b> Job Interview</li> </ul>	<ul style="list-style-type: none"> <li>• <b>FCCLA:</b> Job Interview, Career Investigation, Entrepreneurship</li> <li>• <b>HOSA:</b> Job Seeking Skills, Veterinary Science</li> <li>• <b>SkillsUSA:</b> Job Interview, Entrepreneurship, Employment Application Process</li> <li>• <b>TSA:</b> Career Preparation</li> </ul>

4	Accurately maintain an activity recordkeeping system and apply proper financial recordkeeping skills as they relate to a large animal science supervised agricultural experience (SAE) program. Demonstrate the ability to summarize records and reports by completing SAE and related applications. (TN Reading 9; TN Writing 2, 9)		<ul style="list-style-type: none"> <li>• <b>DECA:</b> Community Service Project, Creative Marketing Project, public Relations Project, Entrepreneurship Innovation Plan, Entrepreneurship Participating, Entrepreneurship Written, Entrepreneurship Growing Your Business</li> <li>• <b>FBLA:</b> Business Plan, Business Procedures</li> </ul>
5	Examine specific technologies that have evolved within the large animal industry (such as, but not limited to equipment, housing, procedures, and healthcare) and evaluate the economic and societal implications of each. (TN Reading 1, 2, 4)	• <b>FFA:</b> Veterinary Science	<ul style="list-style-type: none"> <li>• <b>HOSA:</b> Veterinary Science</li> <li>• <b>TSA:</b> Biotechnology Design</li> </ul>
6	Identify, research, and determine the significance of zoonotic diseases associated with large animals. Compare and contrast findings from multiple credible sources relating to a specific disease (including student's own experience or laboratory experiment, case studies, and scholarly journals). Justify the use of different methods of infection control in the prevention or management of a zoonotic disease and evaluate the efficacy of existing large animal biosecurity measures. (TN Reading 1, 5, 9)	• <b>FFA:</b> Veterinary Science	<ul style="list-style-type: none"> <li>• <b>FCCLA:</b> Advocacy</li> <li>• <b>HOSA:</b> Researched Persuasive Speaking, Veterinary Science</li> </ul>
7	Correctly identify and summarize laws and regulations that pertain to large animal health and safety in an explanatory text, citing specific textual evidence from state and national legislation. Describe health requirements and necessary documentation for large animal transportation and change of ownership. (TN Reading 1, 9; TN Writing 2, 4)	• <b>FFA:</b> Veterinary Science	• <b>FBLA:</b> Emerging Business Issues
8	Review common laboratory safety procedures for tool and equipment operation in the large animal laboratories, including but not limited to accident prevention and control procedures. Demonstrate the ability to follow safety and operational procedures in a lab setting and complete a safety test with 100 percent accuracy. (TN Reading 3)		<ul style="list-style-type: none"> <li>• <b>HOSA:</b> Biomedical Laboratory Science</li> <li>• <b>SkillsUSA:</b> Occupational Health and Safety</li> <li>• <b>TSA:</b> Biotechnology Design</li> </ul>
9	Demonstrate in a live setting or in a presentation the ability to follow procedures precisely, attending to special cases or exceptions noted in appropriate materials, and apply them to the following areas: a. Animal restraint and handling b. Techniques for transportation c. Appropriate use of chemicals (such as pesticide, fungicide, disinfectants) Differentiate between effective methods for handling large animals and methods proven to be less effective. (TN Reading 3)	• <b>FFA:</b> Veterinary Science	

10	Identify the fundamental philosophies related to animal rights and animal welfare. Compare the impact of specific persons, organizations, and legislation related to animal rights and welfare of large animals. (TN Reading 1, 9; TN Writing 9)	<ul style="list-style-type: none"> <li>• <b>FFA:</b> Agricultural Issues</li> </ul>	<ul style="list-style-type: none"> <li>• <b>FBLA:</b> Business Ethics</li> <li>• <b>HOSA:</b> Prepared Speaking, Extemporaneous Writing</li> <li>• <b>TSA:</b> Prepared Presentation, Extemporaneous Presentation</li> </ul>
11	Investigate current large animal issues by analyzing an author's purpose and assessing the extent to which the reasoning and evidence in a specific text support the author's claim. Debate specific issues by forming and supporting claims and counterclaims with specific data and evidence. Issues related to animal rights and animal welfare may include, but are not limited to: a. Abuse and/or neglect b. Environmental implications c. Consumer product implications d. Exhibiting and showing e. Global issues in large animal ethics and their relation to local problems (TN Reading 6, 8, 9; TN Writing 1)	<ul style="list-style-type: none"> <li>• <b>FFA:</b> Agricultural Issues</li> </ul>	<ul style="list-style-type: none"> <li>• <b>FBLA:</b> Business Ethics</li> <li>• <b>HOSA:</b> Biomedical Debate</li> <li>• <b>TSA:</b> Debating Technological Issues</li> </ul>
12	Create a visual representation to differentiate between ruminant and non-ruminant animals and monogastric and polygastric animals, comparing and contrasting their anatomical and physiological differences. Explain the relationships of digestive system types to the ability of an animal to digest and absorb different classes of feed. (TN Reading 7, TN A&P 5)	<ul style="list-style-type: none"> <li>• <b>FFA:</b> Veterinary Science</li> </ul>	
13	Using information from scholarly journals or Tennessee Extension Service, research nutrient requirements of the diets of large animals and organize these into various nutrient groups. Differentiate between roughages and concentrates and their nutritional values. (TN Reading 7; TN Writing 9)	<ul style="list-style-type: none"> <li>• <b>FFA:</b> Veterinary Science</li> </ul>	<ul style="list-style-type: none"> <li>• <b>HOSA:</b> Researched Persuasive Speaking. Veterinary Science</li> </ul>
14	Interpret feed labeling and evaluate factors such as life stage and activity level to determine the nutritional needs and then recommend balance rations for each large animal species, justifying recommendations with evidence from the text. (TN Reading 1, 3, 7; TN Writing 1, 4, 9)	<ul style="list-style-type: none"> <li>• <b>FFA:</b> Veterinary Science</li> </ul>	<ul style="list-style-type: none"> <li>• <b>HOSA:</b> Veterinary Science</li> </ul>
15	Diagnose the symptoms of nutritional diseases relevant to large animals and recommend the appropriate control procedures, citing specific evidence to support recommendations. (TN Reading 7; TN Writing 1, 7, 8, 9)	<ul style="list-style-type: none"> <li>• <b>FFA:</b> Veterinary Science</li> </ul>	<ul style="list-style-type: none"> <li>• <b>HOSA:</b> Veterinary Science</li> </ul>
16	Research and develop illustrative models of the major components of male and female reproductive systems in large animals and prepare a short narrative to distinguish the function of reproductive organs, endocrine glands, and hormones. Produce an explanatory essay comparing the physiological changes that occur across different species during reproductive phases, including the estrus cycle, fertilization, gestation, parturition and lactation. (TN Reading 7, 9; TN Writing 2, 4; TN A&P 6)	<ul style="list-style-type: none"> <li>• <b>FFA:</b> Veterinary Science</li> </ul>	<ul style="list-style-type: none"> <li>• <b>HOSA:</b> Extemporaneous Health Poster, Veterinary Science</li> <li>• <b>TSA:</b> Promotional Graphics</li> </ul>

17	<p>Using graphical representations and descriptive text, explain how the roles of heritability, selection intensity, generation interval, and other advanced principles of genetics (such as DNA testing for disorders) apply to predict gene and trait transfer in large animal species. Principles include but are not limited to:</p> <ul style="list-style-type: none"> <li>a. Economically important traits in production animals (i.e. artificial reproduction methods)</li> <li>b. Interpretation and utilization of animal performance records (i.e. Expected Progeny Difference [EPD])</li> <li>c. Hybrid vigor</li> </ul> <p>(TN Reading 1, 4, 7, 9; TN Writing 2, 4, 7, 9; TN Biology I 4; TN Biology II 4)</p>	<ul style="list-style-type: none"> <li>• <b>FFA:</b> Veterinary Science</li> </ul>	<ul style="list-style-type: none"> <li>• <b>HOSA:</b> Veterinary Science</li> </ul>
18	<p>Synthesize research on the historical importance of horses, noting major economic, social, and medical advances impacting domestication. Produce an informational essay or model (such as a timeline, graphical illustration, or presentation) that formulates comparisons among different horse breeds and hybrids. Demonstrate conceptual understanding and technical skill in current practices of comprehensive health care and management for the following:</p> <ul style="list-style-type: none"> <li>a. Design appropriate facilities based on assessment of needs and present plans in a visual format</li> <li>b. Compare appropriate owner/handler responses to behaviors and instincts to ensure safety of both handler and animal in a variety of situations</li> <li>c. Distinguish between clinical signs of proper health and poor health, justifying explanations with data and evidence (TN Reading 1)</li> <li>d. Using quantitative reasoning and appropriate units, calculate appropriate rations based on animal characteristics (age, weight, breed, activity level) and nutritional needs by creating systems of equations that describe numerical relationships</li> <li>e. Illustrate the reproductive cycle graphically, and summarize available breeding methods and current reproductive technologies (TN Reading 2, 7)</li> <li>f. Research common diseases and parasites and their effects on the health of horses, and draw evidence from the most recent medical literature to recommend the best prevention or control measures.</li> </ul> <p>(TN Reading 1, 2, 3, 7, 8, 9; TN Writing 2, 7, 8, 9; TN Math N-Q, A-CED)</p>	<ul style="list-style-type: none"> <li>• <b>FFA:</b> Horse Evaluation, Veterinary Science</li> </ul>	<ul style="list-style-type: none"> <li>• <b>HOSA:</b> Researched Persuasive Speaking, Veterinary Science</li> <li>• <b>TSA:</b> Essays on Technology</li> </ul>

19	<p>Synthesize research on the historical importance of cattle, noting major economic, social, and medical advances impacting domestication. Produce an informational essay or model (such as a timeline, graphical illustration, or presentation) that formulates comparisons among different cattle breeds. Demonstrate conceptual understanding and technical skill in current practices of comprehensive health care and management for the following:</p> <ol style="list-style-type: none"> <li>Design appropriate facilities based on assessment of needs and present plans in a visual format</li> <li>Compare appropriate owner/handler responses to behaviors and instincts to ensure safety of both handler and animal in a variety of situations</li> <li>Distinguish between clinical signs of proper health and poor health, justifying explanations with data and evidence</li> <li>Using quantitative reasoning and appropriate units, calculate rations based on animal characteristics (age, weight, breed, activity level) and nutritional needs by creating systems of equations that describe numerical relationships</li> <li>Illustrate the reproductive cycle graphically, summarize available breeding method, and current reproductive technologies</li> <li>Research common diseases and parasites and their effects on the health of cattle, and draw evidence from the most recent medical literature to recommend the best prevention or control measures</li> <li>Evaluate the economic implications of livestock management practices (such as dehorning)</li> </ol> <p>(TN Reading 1, 2, 3, 7, 8, 9; TN Writing 2, 7, 8, 9; TN Math N-Q, A-CED)</p>	<ul style="list-style-type: none"> <li>• <b>FFA:</b> Dairy Cattle Evaluation, Livestock Evaluation, Veterinary Science</li> </ul>	<ul style="list-style-type: none"> <li>• <b>HOSA:</b> Researched Persuasive Speaking, Veterinary Science</li> <li>• <b>TSA:</b> Essays on Technology</li> </ul>
20	<p>Synthesize research on the historical importance of sheep and goats, noting major economic, social, and medical advances impacting domestication. Produce an informational essay or model (such as a timeline, graphical illustration, or presentation) that formulates comparisons among different sheep and goat breeds. Demonstrate conceptual understanding and technical skill in current practices of comprehensive health care and management for the following:</p> <ol style="list-style-type: none"> <li>Design appropriate facilities based on assessment of needs and present plans in a visual format</li> <li>Compare appropriate owner/handler responses to behaviors and instincts to ensure safety of both handler and animal in a variety of situations</li> <li>Distinguish between clinical signs of proper health and poor health, justifying explanations with data and evidence</li> <li>Using quantitative reasoning and appropriate units, calculate appropriate rations based on animal characteristics (age, weight, breed, activity level) and nutritional needs by creating systems of equations that describe numerical relationships</li> <li>Illustrate the reproductive cycle graphically, and summarize available breeding methods and current reproductive technologies</li> <li>Research common diseases and parasites and their effects on the health of sheep and goats, and draw evidence from the most recent medical literature to recommend the best prevention or control measures</li> </ol> <p>(TN Reading 1, 2, 3, 7, 8, 9; TN Writing 2, 7, 8, 9; TN Math N-Q, A-CED)</p>	<ul style="list-style-type: none"> <li>• <b>FFA:</b> Livestock Evaluation Veterinary Science</li> </ul>	<ul style="list-style-type: none"> <li>• <b>HOSA:</b> Researched Persuasive Speaking, Veterinary Science</li> <li>• <b>TSA:</b> Essays on Technology</li> </ul>

21	<p>Synthesize research on the historical importance of swine, noting major economic, social, and medical advances impacting domestication. Produce an informational essay or model (such as a timeline, graphical illustration, or presentation) that formulates comparisons among different swine breeds. Demonstrate conceptual understanding and technical skill in current practices of comprehensive health care and management for the following:</p> <ol style="list-style-type: none"> <li>Design appropriate facilities based on assessment of needs and present plans in a visual format</li> <li>Compare appropriate owner/handler responses to behaviors and instincts to ensure safety of both handler and animal in a variety of situations</li> <li>Distinguish between clinical signs of proper health and poor health, justifying explanations with data and evidence</li> <li>Using quantitative reasoning and appropriate units, calculate appropriate rations based on animal characteristics (age, weight, breed, activity level) and nutritional needs by creating systems of equations that describe numerical relationships</li> <li>Illustrate the reproductive cycle graphically, and summarize available breeding methods and current reproductive technologies</li> <li>Research common diseases and parasites and their effects on the health of swine, and draw evidence from the most recent medical literature to recommend the best prevention or control measures</li> </ol> <p>(TN Reading 1, 2, 3, 7, 8, 9; TN Writing 2, 7, 8, 9; TN Math N-Q, A-CED)</p>	<ul style="list-style-type: none"> <li>• <b>FFA:</b> Livestock Evaluation, Veterinary Science</li> </ul>	<ul style="list-style-type: none"> <li>• <b>HOSA:</b> Researched Persuasive Speaking, Veterinary Science</li> <li>• <b>TSA:</b> Essays on Technology</li> </ul>
22	<p>Synthesize research on the historical importance of poultry, noting major economic, social, and medical advances impacting domestication. Produce an informational essay or model (such as a timeline, graphical illustration, or presentation) that formulates comparisons among different poultry breeds. Demonstrate conceptual understanding and technical skill in current practices of comprehensive health care and management for the following:</p> <ol style="list-style-type: none"> <li>Design appropriate facilities based on assessment of needs and present plans in a visual format</li> <li>Compare appropriate owner/handler responses to behaviors and instincts to ensure safety of both handler and bird in a variety of situations</li> <li>Distinguish between clinical signs of proper health and poor health, justifying explanations with data and evidence</li> <li>Using quantitative reasoning and appropriate units, calculate appropriate rations based on bird characteristics (age, weight, breed, activity level) and nutritional needs by creating systems of equations that describe numerical relationships</li> <li>Illustrate the reproductive cycle graphically, and summarize available breeding methods and current reproductive technologies</li> <li>Research common diseases and parasites and their effects on the health of poultry, and draw evidence from the most recent medical literature to recommend the best prevention or control measures</li> </ol> <p>(TN Reading 1, 2, 3, 7, 8, 9; TN Writing 2, 7, 8, 9; TN Math N-Q, A-CED)</p>	<ul style="list-style-type: none"> <li>• <b>FFA:</b> Poultry Evaluation, Veterinary Science</li> </ul>	<ul style="list-style-type: none"> <li>• <b>HOSA:</b> Researched Persuasive Speaking, Veterinary Science</li> <li>• <b>TSA:</b> Essays on Technology</li> </ul>

ALL	CAN BE USED WITH ALL/MOST STANDARDS	<ul style="list-style-type: none"> <li>• <b>FFA:</b> Agriscience Fair, Veterinary Science</li> </ul>	<ul style="list-style-type: none"> <li>• <b>FBLA:</b> Agribusiness</li> <li>• <b>FCCLA:</b> Illustrated Talk, Chapter in Review Display, Chapter in Review Portfolio</li> <li>• <b>HOSA:</b> Veterinary Science, Prepared Speaking</li> <li>• <b>SkillsUSA:</b> Career Pathways Showcase, Job Skills Demonstration A, Job Skills Demonstration O, Prepared Speech, Extemporaneous Speaking, Chapter Display</li> <li>• <b>TSA:</b> Prepared Presentation</li> </ul>
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